

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**BASF Corporation
Glyoxal Plant
Geismar, Ascension Parish, Louisiana
Agency Interest Number: 2049
Activity Number: PER20050001
Proposed Permit Number: 2094-V1**

I. APPLICANT

Company:
BASF Corporation
P.O. Box 457
Geismar, LA 70734

Facility:
Glyoxal Plant
8404 River Road, Geismar, Ascension Parish, Louisiana
Approximate UTM coordinates are 692.33 kilometers East and 3342.68 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS

The BASF Geismar Facility manufactures acetylene, amine compounds, aniline, ethylene oxide, gamma-butyrolactone, ethylene glycol, glyoxal, 1,4-butanediol, gasoline additives, methylenediphenyl diisocyanate, N-methyl-2-pyrrolidone, polyols, surfactants, tetrahydrofuran, polytetrahydrofuran, toluenediisocyanate, N-vinyl-2-pyrrolidone, and polyvinylpyrrolidone.

The Glyoxal Plant produces glyoxal via oxidation of ethylene glycol at low pressure and elevated temperature in the presence of a copper catalyst. Vapors from the reactor are absorbed into water to produce a crude 40% aqueous solution. Aldehydes are removed by steam stripping. Amine extraction absorbs residual organic acids to give the final product.

A Part 70 permit addressing the Glyoxal Plant has already been issued. In addition, the facility has several state permits that will remain effective until replaced by a Part 70 permit. These include:

Permit #	Units or Sources	Date Issued
2044(M-1)	Aniline I	6/15/2001
2332	MNB Tank	8/15/1995
2074	Aniline Incinerator	5/26/1991

Several Part 70 permits addressing portions of the facility have already been issued. These include:

Permit #	Units or Sources	Date Issued
2526-V1	Acetylene	10/2/2000
2028-V3	Specialty Amines	12/23/2005
2558-V0	Aniline II	8/24/1998
2094-V0	Glyoxal	8/2/2000
2334-V0	MDI I	1/23/2006
2559-V2	MDI II	12/28/2001
2039-V0	NVP/PVP	4/11/2002
2427-V0	Polyols/CCU	11/21/2000
2582-V2	Surfactants	6/29/2005
2643-V0	TDI	11/4/1999
2265-V3	Utilities/WWTP	11/22/2000
2564-V1	Utilities Boilers 3 & 6	11/22/2000
2459-V3	EO/EG	3/30/2005
2353-V0	Diols/Intermediates Complex	2/20/2006

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III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application was submitted on February 2, 2005 requesting a Part 70 operating permit for the Glyoxal Plant. Additional information dated April 22, 2005 and February 27, 2006 was also submitted.

Project

BASF proposes operating permit renewal updates to the Glyoxal Plant Part 70 Operating Permit, No. 2094-V0. The updates reflect proposed adjustments to various operating conditions that have evolved since the previous permit action. A brief summary of the proposed changes is as follows:

- Minor updates have been made to GC XVII Activities, including startup/shutdown VOC and carbon monoxide emission rates.
- Fugitive emission calculations, Emission Point 4-88, have been reconciled.
- Storage tank, railcar and truck loading emissions have been updated as a result of minor changes in throughput: Emission Points 5-88, 7-88, 8-88, 9-88, and 10-88, respectively.
- Storage tank Emission Point 6-88 has permanently been removed from service and deleted.
- Emission rates have been adjusted for the Glyoxal Extraction System Vent, Emission Point 1-88, and the Glyoxal Oxidizers Stack, Emission Point 2-88.
- Emission rates have been reconciled for the Glyoxal Cooling Tower, Emission Point 11-88.

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM ₁₀	0.07	1.56	+1.49
SO ₂	0.006	0.01	+0.004
NO _x	0.93	1.85	+0.92
CO	1.83	1.56	-0.27
*VOC	4.06	7.64	+3.58

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*VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Before	After	Change
Acetaldehyde	0.074	0.81	+0.736
Ethylene glycol	0.070	0.25	+0.18
Ethylene oxide	0.220	0.64	+0.42
Formaldehyde	0.059	0.94	+0.881
Total	0.423	2.64	+2.217

Other VOC (TPY): 5.00

Prevention of Significant Deterioration Applicability

This permit was reviewed for compliance with 40 CFR 70, the Louisiana Air Quality Regulations, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP).

There is no physical change in the method of operation, therefore the modifications/revisions proposed in this application do not trigger PSD review. Prevention of Significant Deterioration (PSD) does not apply.

MACT requirements

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. Facility-wide emissions of acetaldehyde, ethylene oxide, and formaldehyde are emitted in quantities above the Minimum Emission Rate (MER) and are controlled by Maximum Achievable Control Technology (MACT). Ethylene glycol is a Class III TAP, therefore no MACT is required. Air Toxic Compliance Plan No. 92067 dated November 1, 1994, was approved for Geismar site. The requirements of the compliance plan have been incorporated herein.

Air Modeling Analysis

Not Applicable.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

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Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

IV. PERMIT SHIELDS

No permit shield has been granted.

V. PERIODIC MONITORING

The Monitoring, Reporting, and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the proposed permit.

VI. APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS

ID No:	Requirements	Notes
-	All exemptions are listed in Section XI of the draft Part 70 permit	

VII. STREAMLINED REQUIREMENTS

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
N/A			

VIII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental

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impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

Nitrogen Oxides (NO_x) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

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Sulfur Dioxide (SO₂) – An oxide of sulfur.

Sulfuric Acid (H₂SO₄) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.